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ABSTRACT

Operation Waste Watch is a series of seven sequential learning units which addresses the subject of litter control and solid waste management. Each unit may be used in a variety of ways, depending on the needs and schedules of individual schools, and may be incorporated into various social studies, science, language arts, health, mathematics, and artistic activities. Each unit consists of a teacher's guide, filmstrip-cassette set, activity cards, test materials, duplicating masters, and a poster. This document contains the teacher's guide and activity cards for the third-grade unit entitled "Trash Trends." In this unit, students trace historical changes in consupmtion and packaging. They also study the roles of packaging in everyday life and learn the meaning of "biodegradable." Twelve individual- and 15 class-ativity cards are included. (CW)

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Operation Waste Watch

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Trash Trends

Level
3

Teacher Guide

2

INTRODUCTION

OPERATION WASTE WATCH is a series of 7 sequential learning units which addresses the subjects of litter control and solid waste management. The curriculum, developed by the Division of Litter Control, Virginia's state litter prevention agency, is designed for classroom use in kindergarten through grade six.

Each OPERATION WASTE WATCH unit may be used in a variety of ways, depending on the needs and schedules of individual students and schools. Each unit is interdisciplinary in approach and may be incorporated into the various science, social studies, and health curricula Virginia teachers are presently using. Language arts, mathematics, and artistic activities are also highlighted. Each unit consists of a teacher's guide, filmstrip-cassette set, activity cards for class and individual student use, test materials, coloring book duplicating masters or comic books, and a colorful poster. Each elementary school in Virginia may receive a complete set of OPERATION WASTE WATCH without cost.

Flexibility is a key element of the OPERATION WASTE WATCH program. The sequence of the units within the curriculum may be changed to suit the abilities of students in the individual school. For this reason, teachers should become familiar with each of the units. Each instructor should also feel free to present concepts found in previous units. This is especially important for upper elementary students who are unfamiliar with the solid waste vocabulary and ideas presented in earlier units. The materials in each unit are color-coded for easy identification.

The teacher is free to shorten or lengthen the series of activity cards which are the heart of the unit, to suit her/his schedule or to build her/his own unit around the OPERATION WASTE WATCH auxiliary materials.

OPERATION WASTE WATCH is based on WASTE IN PLACE, the elementary school curriculum recently created by Keep America Beautiful. Solid waste management has become a very important environmental topic, but it is a subject which is too often superficially addressed in elementary textbooks.

WASTE IN PLACE was the first sequential elementary curriculum in the United States to address the concepts of proper waste handling. WASTE IN PLACE is available at cost to all localities around the country organized under the Clean Community System of Keep America Beautiful and to other interested groups. In developing OPERATION WASTE WATCH for Virginia's elementary schools, the Division of Litter Control changed the format of WASTE IN PLACE and designed supplementary activities and materials, including audiovisual aids.

OPERATION WASTE WATCH differs significantly from WASTE IN PLACE in its approach to the subject matter only in Levels 2 and 3. The Division believes that the ideas presented in these 2 units merit special emphasis in a study of solid waste problems in Virginia. Level 2, LITTER POLLUTION, addresses pollution problems associated with litter, while Level 3, TRASH TRENDS, examines packaging trends in relationship to current solid waste problems.

Field Testing

Two versions of OPERATION WASTE WATCH were piloted during the 1979-1980 school year in over 125 classrooms in 14 school systems with very positive results. A summary of the results of this field testing is available from the Division. Based on the results of the piloting, portions of the draft curriculum were revised in the fall of 1980.

Changing Littering Behavior

In addition to equipping students with important facts about litter and solid waste management, OPERATION WASTE WATCH is designed to help students modify their everyday waste disposal habits.

A study of students' waste disposal behavior was conducted in the spring of 1980 by two psychologists from Virginia Polytechnic Institute and State University, Mr. John Cope and Dr. Scott Geller. Their study confirmed that students learn from involvement with OPERATION WASTE WATCH. Student test performance following the curriculum was statistically higher than performance on the pretest. (Grades 1, 4 and 6 were the levels involved in the study.) Almost all of the teachers indicated that the OWW program materials were interesting to the students.

Most of the teachers felt that their students' littering be-

havior had decreased as a direct result of the program. The Division of Litter Control encourages teachers to emphasize recycling and the proper disposal of wastes. With continued positive reinforcement of proper behavior, and practice by the children of proper disposal techniques, teachers will see an even greater reduction in littering behavior.

The Virginia Plan: A Model Program to Prevent Littering

The DIVISION OF LITTER CONTROL was established in 1977 to control, prevent, and eliminate litter from the state to the maximum practical extent.

One-half of Division funds are granted annually to the localities of the state to finance local litter prevention programs. Over 90% of the counties and cities annually apply for and receive grant money from the Division. To assist these localities in organizing effective, comprehensive, long-range litter control programs, the Division has developed an organizational package, THE VIRGINIA PLAN: A MODEL PROGRAM TO PREVENT LITTERING, which is available to all community leaders interested in developing local programs. OPERATION WASTE WATCH is one component of THE VIRGINIA PLAN.

The Division is encouraging local litter prevention coordinators to work closely with schools in each locality. Many localities are promoting the implementation of OPERATION WASTE WATCH in their schools.

CONTACT THE DIVISION OF LITTER CONTROL FOR THE NAME AND PHONE NUMBER OF THE LITTER CONTROL COORDINATOR IN YOUR LOCALITY.

OPERATION WASTE WATCH UNIT TOPICS

Level K

Natural and Man-Made Objects

Students practice classification skills and learn to differentiate between natural and man-made objects in indoor and outdoor environments. They also learn to identify litter.

Level 1

Waste Out of Place

Students classify objects into two categories, "waste objects" and "useful objects." In addition, they learn to identify litter and dispose of their own waste items properly.

Level 2

Litter Pollution

Students study the negative effects of littering: injury to humans and animals, environmental pollution, and wasted resources. In addition, they explore a littered area, study the characteristics of litter, and learn how to clean it up.

Level 3

Trash Trends

Students trace historical changes in consumption and packaging. They also study the roles of packaging in everyday life and learn the meaning of "biodegradable."

Level 4

Let's Waste Less Waste

Students examine changes which can be made in their homes to reduce solid waste and litter. They also explore various sources of litter in their communities.

Level 5

Trash Treasures

Students discover that while many things are recycled by nature, quite a number of modern products must be recycled by people. They learn that recycling and resource recovery can help save important resources which are often lost when items are tossed into a trash receptacle.

Level 6

Community Solutions for Solid Waste Pollution

Students study their own locality's solid waste problems and design a model waste disposal plan for an imaginary community.

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LEVEL 3

RATIONALE

This series of instructional materials, developed by the Division of Litter Control, is designed to help elementary students deal effectively with solid waste problems encountered in their everyday lives. It will also prepare them to deal as adults with the growing problem of waste disposal facing each community. In Virginia, litter pickup alone is estimated to cost $25 million annually.

Litter is a very accessible pollutant and one even young children can comprehend. Children may be able to do very little to solve other environmental problems; but they can learn to dispose of waste properly, help recycle some items, and come to understand how their own behavior affects the environment. A solid waste management unit is an excellent place to begin creating environmental awareness. From this point we can begin building in our youth a strong sense of environmental stewardship and pride.

The products of modern society yield many benefits. However, the large amount of merchandise produced and sold, and the wealth of modern types of packaging for these products contribute greatly to our litter and refuse management problems.

In the Level 3 unit the children are asked to study packaging materials and identify necessary and unnecessary packaging. They consider how merchandise, packaging, and solid waste have changed over the years. In addition, the children are encouraged to reuse and recycle some items used in their daily activities.

If your students have not studied earlier units of OPERATION WASTE WATCH, feel free to borrow ideas, activities, and filmstrips from the previous kits to prepare your students for the Level 3 ideas.

MAJOR IDEAS OF THE LEVEL 3 UNIT

1. Man-made products and packaging have changed through time.
2. In our country there are problems with both littered and non-littered solid wastes.
3. The increased numbers of people and products create a huge amount of waste.

4. Modern packaging has many advantages.
5. Some modern packages are necessary while others are not.
6. Modern materials often last a very long time when littered in the environment.
7. It takes thought and imagination to invent useful packages.
8. People are responsible for solid waste and litter. They can learn to reuse and recycle waste and other materials and dispose of trash properly.

UNIT OBJECTIVES

At the completion of this unit, the students will be able to:

1. DEFINE "solid waste";
2. DEFINE "litter";
3. DEFINE "biodegradable" and IDENTIFY objects which are biodegradable;
4. DISTINGUISH between packaging materials used in present-day America and those used in earlier times and by other cultures;
5. INVENT new uses for used packaging materials.

ELEMENTARY SCIENCE PROGRAM OBJECTIVES

The following program objectives should be emphasized in the third grade science program and are incorporated into this unit (see reference 3, pg. 7):

1. Observing—The student will use all senses in the identification of objects and their properties, changes in properties, controlled observations, and ordering of a series of observations.
2. Classifying—The student will classify objects, actions, and phenomena.
3. Measuring—The student will demonstrate the ability to use standard units of measurement in determining length, area, volume, weight, and temperature.
4. Collecting and Organizing Data—The student will collect and organize information about a problem, communicate it verbally or graphically, and present these data so that trends can be analyzed.
5. Using Equipment—The student will assemble and use the appropriate tools and apparatus needed to investigate a problem.
6. Summarizing—The student will describe orally, in writing, or nonverbally conclusions about the processes and products of scientific inquiry.

INSTRUCTIONAL STRATEGY

1. Review this teacher's guide and study all unit components thoroughly. Also become familiar with the other OPERATION WASTE WATCH units.
2. Decide which elements of the unit kit and which activity cards you will use. Add your own ideas as necessary or pull activities from OPERATION WASTE WATCH units on other grade levels.
3. Prepare all necessary materials and arrange for any outside speakers or field trips.
4. **Be sure to find out what your community is doing to fight the littering problem. Contact the Division of Litter Control or your local government.**
5. Administer the pretest to your students. Use the results to modify your unit plans as necessary.
6. Briefly discuss the topic and title of the unit with your class. Tell the students about some of the activities they will be involved in.
7. Explain the contents of the unit kit to your students.
8. Hang the poster in a prominent spot in your classroom.
9. Present the filmstrip to the class. During the showing, stop the filmstrip to allow for discussion of important ideas.
10. Order the **Junior Ecology Club Certificates** from the Division.
11. Proceed with the INDIVIDUAL AND CLASS ACTIVITY CARDS.
12. Present the comic books at some appropriate point in the unit. Use these as a motivational and teaching tool.
13. At the completion of the unit, present the filmstrip once again as a review activity. Elicit discussion of ideas the children have learned.
14. Administer the posttest to your students.
15. Return all unit components to the box for use by the next class.
16. **Be sure to review and reinforce proper waste disposal habits throughout the school year!**

TIME FRAME

The Level 3 unit will take approximately 6 weeks (30 thirty-minute learning sessions) to complete.

If you desire to teach a shortened version of the unit, we recommend you use only the CORE ACTIVITY CARDS. Each core card is labeled CORE in the upper left-hand corner. Using just

the core activities should cut the required instructional time to about 3 weeks. Another method is to use the ACTIVITY CARDS and other materials as guidelines for developing your own shortened unit.

Allow approximately 20 minutes for administering the tests at the beginning and end of the unit. Each filmstrip viewing should take about 15 minutes.

EVALUATION INSTRUMENTS

Included in this unit are duplicating masters for the test. Administer the test to your class just before beginning the unit. This test should be used as a screening device to identify children who will need special help and those who will need to complete only a minimum number of INDIVIDUAL ACTIVITY CARDS to strengthen their knowledge.

Administer the test once again, immediately after the class completes the unit. Posttest results will help determine whether or not your students attained the unit objectives. Comparison of the pretest and posttest results for each student can help you determine the effectiveness of the unit.

FILMSTRIP AND CASSETTE

The filmstrip and cassette set provided with this unit is designed for use as both an introductory and review activity. Before using the ACTIVITY CARDS, present the filmstrip to the class as an introduction to the unit. This may be done in small groups or as a total class activity. Present the filmstrip again at the end of the unit as a review of major ideas.

This guide contains a copy of the filmstrip script with asterisks (*) indicating spots in the program where we encourage you to stop the cassette and filmstrip to allow for class discussion. The cassette has audible tones and should be used with a manually-operated filmstrip projector. **The filmstrip is brief and is to be used as a teaching tool. During the showing, please encourage group discussion of the ideas presented.** The script may be read aloud by an adult if for any reason a cassette recorder is not available or if this delivery method is preferred.

When the filmstrip is used as a review activity, it may be most helpful to read the script rather than use the audiotape. Proceeding at a comfortable speed, ask the children to respond orally to the questions raised.

INDIVIDUAL ACTIVITY CARDS (IACs)

The 12 IACs are designed for use by small groups or individual students. They can be handed out by the teacher, or learning centers can be set up using the IACs as the foundation. For many classes of young children, the IACs may have to be combined with the CLASS ACTIVITY CARDS (CACs) and used as a lesson plan for total class activities. We encourage you to restructure, modify, delete, and create additional IAC activities as necessary. The students should complete the IACs before the CACs are introduced. Take time to discuss the various IAC activities with the whole class as you proceed through the unit.

IACs which provide more advanced activities are marked with asterisks (*). Students who do very well on the pretest may need to use only a few of the IACs.

CLASS ACTIVITY CARDS (CACs)

The 15 CACs provide a sequential set of instructional activities. They are basically a lesson plan presented in card form to simplify modifications, additions, deletions, or restructuring by the teacher. The CACs are designed as total class activities.

COMIC BOOKS

In the kit box you will find 25 copies of the comic book entitled, A World Without Litter. Before teaching the unit, read the comic yourself. You may decide to design study questions based on the story to gauge your students' vocabulary and comprehension skills.

At some point during the unit, pass out the books to your students. Allow the children to read the story out loud. Discuss the theme of the comic book as a class or in small groups.

If you have extra time, you may decide to have your students act out a skit based on the story. Perhaps they could present their skit to another class. Or the students could exercise their own creativity by writing and illustrating their own litter prevention comics to take home to their families.

Be sure to return the comic books to the unit box so the next class can use them.

JUNIOR ECOLOGY CLUB PROGRAM

Since the fall of 1978, the Division of Litter Control has sponsored a successful ECOLOGY CLUB PROGRAM for grades 6-12. Because of the favorable input from teachers in the lower grades, the Division has developed a JUNIOR ECOLOGY CLUB PROGRAM for students in kindergarten through grade 5 who have completed at least one unit of OPERATION WASTE WATCH. To obtain membership certificates for your students, simply **duplicate** the JUNIOR ECOLOGY CLUB ORDER FORM included in this guide and return a completed copy to the Division.

The certificates may be used simply as a final reward for your students once they have completed the OPERATION WASTE WATCH unit, or used to begin an active ecology club program with your class. A list of suggested club activities will be included with your certificates.

COMING IN THE FUTURE

A major advantage of the activity card format used in OPERATION WASTE WATCH is that additional cards may be added and revisions made at minimal expense to the Division.

The Division will continue to evaluate the program throughout the coming years. As a result of this evaluation, new and revised ACTIVITY CARDS will be developed periodically and sent to your school.

ORDERING REPLACEMENT MATERIALS FOR THIS UNIT

Replacement copies of the filmstrip, cassette, poster, teacher's guide, activity cards, and coloring/comic books for this unit may be obtained without charge from the Division of Litter Control.

DUPLICATING MASTERS

This unit contains the duplicating masters listed below. Photocopy these materials as necessary:

1. PRETEST AND POSTTEST
2. CERTIFICATE OF AWARD
3. WORKSHEET

VOCABULARY

The following list of terms is of major significance in this unit. The primary function of this list is to provide a glossary **for the teacher.** We do not recommend rote memorization of these terms and their definitions by students. The exercises provided in the activity cards should help the students understand these terms on an experiential level. Remember, DEFINITIONS DEVELOPED WITHOUT AN EXPERIENCE BASE ARE MEANINGLESS TO CHILDREN.

As your class proceeds through this unit, we suggest you assist the students in developing **their own verbal definitions for these terms.** Each student should also be able to recognize the terms in written form by the end of the unit.

1. BIODEGRADABLE—material which decomposes fairly quickly by biological processes
2. CONTAINER—an object used to hold something else
3. DECOMPOSE—to break down to basic elements; to rot
4. LITTER—man-made (or man-used) solid waste that is disposed of in the wrong place or allowed to escape from a container
5. PACKAGING—a wrapper or container
6. RECYCLING—using materials recovered from solid waste to make new things
7. REFUSE—another word for solid waste.
8. REUSE—to use again
9. SANITARY LANDFILL—a large, outdoor, area for waste disposal where discarded materials are usually compacted before being covered with a layer of earth; a place to bury solid waste
10. SOLID WASTE—all useless, unwanted, or discarded materials

REFERENCES

1. Divisions of Elementary, Secondary, and Vocational Education, Virginia Department of Education. Environmental Education Guide K-12. Richmond: n.p., 1974.
2. Division of Litter Control, Department of Conservation and Economic Development. Litter Control Project Guide for Elementary School Teachers. Richmond: Spencer's Printing, 1978.
3. Division of Science and Elementary Administration, Virginia Department of Education. Program Goals and Objectives for Elementary Science. Richmond: n.p., 1978.

LEVEL THREE FILMSTRIP

Trash Trends (Length: 8:17)

	Narration	Visuals
1.	(Title slide)	
2.	(Credit slide)	
3.	(Shopping slide)	Grocery Shopping Scene
4.	(Shopping slide)	"
5.	(Shopping slide)	"
6.	(Shopping slide)	"
7.	(Shopping slide)	"
8.	(Shopping slide)	"
9.	The food we buy at a grocery store comes packaged in many types of containers.	Child with Grocery Purchases
10.	For example, mayonnaise is packaged in a glass jar. The glass keeps it fresh and clean. It would be impossible to take mayonnaise from the factory, to the grocery store and then home without it spoiling unless it were packaged in a jar or a can.	Grocery Purchases

11. People have invented many interesting kinds of packages. An egg carton is one special type of package. Would it be hard to carry eggs home loose or in a paper bag? Can you think of another type of special container for eggs? (*)

    Why do you think the drinks are packaged in aluminum cans? What other kinds of containers could drinks be packaged in? (*)

    Egg Carton and Soft Drink Containers

12. Can you think of another way to package cereal? (*)

    Cereal Boxes

13. Some packages are stronger than others. This bread is packaged in a thin wrapper. It was put in the bottom of the grocery bag by mistake. What happened to the bread? (*)

    Flattened Bread

14. Here are some other types of food containers.

    Grocery Products

15. Packaging is very useful. It keeps our purchases clean, fresh, and hot or cold.

    Grocery Containers

16. Sometimes, packaging is used to keep us guessing!

    Birthday Gift

17. And sometimes we think we are getting more in a package than we really are!

    Cereal Container

18. Sometimes it takes a lot of thinking and imagination to invent packages. Could you design a package to keep an ice cube from melting?

    Ice Cube

19. Could you invent a package to keep a raw egg from breaking, even if it were dropped six feet onto a concrete floor?

    Eggs

20. Although packaging helps us in many ways, it can also lead to some problems. Most packaging is thrown away after being used only one time. And Americans throw away a very large amount of packaging material every day.

Trash Receptacle

21. After we throw it away, most packaging ends up with our other solid waste at a sanitary landfill—which is a modern kind of dump.

Landfill

22. In the landfill, the trash is crushed so it will take up less space—then covered with a layer of dirt.

Landfill Compactor

23. Through the actions of nature, some of this trash will biodegrade—that is, it will rot and become part of the soil. Food and paper are two products which will biodegrade in a landfill.

Decomposing Potatoes

24. Other materials such as glass, plastic, and aluminum are not biodegradable. They will stay in the landfill for thousands of years without changing.

Glass Container

25. Our landfills are getting very crowded with things that don't biodegrade or decompose in some other way. Americans throw away a huge amount of waste each year, and we are running out of space for new landfills to hold all our trash. Landfills also take up space which could be used for other things—such as houses, schools, hospitals, stores, farms, and wildlife refuges.

Landfill

26. Some materials we bury in landfills could be recycled to make new things. Aluminum, and glass are resources which are not biodegradable but which can be recycled by people.

Refuse

LEVEL 3
TEACHER CARD
OPERATION WASTE WATCH
VIRGINIA DIVISION OF LITTER CONTROL

Trash Trends
Individual Activity Cards

Introduce the INDIVIDUAL ACTIVITY CARDS (IACs) after all the students have seen the filmstrip. The 12 IACs are designed for use by small groups of children or individual students. However, the IACs may be used as total class activities if it is not feasible to carry out individual or small group activities with your class.

The Level 3 IACs need not be completed in numbered sequence. There are several ways to use the IACs:

1. **Individual students can work alone on single cards.**
2. **One group of students could work with you** on a few cards while an aide or other adult uses some other cards with another group.
3. Place three or four IACs at one time in a **Learning Center.**
4. **Let the majority of students work on other tasks while you assist a small group with the IACs.** You may wish to duplicate additional sets of cards so that several children can work on the same activity simultaneously.
5. Small groups of students or individual pupils could **carry out one activity and then make a report** to the rest of the class.
6. If a cassette player is available, you may decide to **put the IACs on audiotape.**

We recommend each student complete the IACs before the CLASS ACTIVITY CARDS (CACs) are introduced. Cards containing more difficult activities are marked with asterisks (*) in the upper right-hand corners.

To shorten the unit from approximately 5 weeks to 2 or 3 weeks, we suggest you use only the CORE ACTIVITY CARDS. Core cards are labeled CORE in the upper left-hand corners.

IDEA AND OBJECTIVE NOTATIONS REFER TO NUMBERED IDEAS AND UNIT OBJECTIVES ON PAGES 1 AND 2 OF THE TEACHER GUIDE.

Materials Needed:

1. Ice cubes
2. A variety of packaging materials
3. Raw eggs
4. Paper and cloth to make litter bags
5. Glue, scissors
6. Needles, thread
7. Grocery bags
8. Cotton balls
9. Rulers

Posters

Solid waste is all the trash people throw away.

Make a poster showing some ways we can have less solid waste by reusing or recycling our trash.

Help your teacher display your poster in the school.

Litter Bags

A litter bag is a container used to hold trash or litter. Litter is solid waste people put in the wrong place.

Use pieces of cloth, plastic, or paper to make your own litter bag. The sides of the bag may be glued or sewn together. Attach a handle, if you wish.

Decorate your bag to show a litter cleanup day, a beautiful neighborhood, or a pretty design.

If there is time, make different types of bags for different uses. For example, you might make one for picnics, and one for your family's car. You could also make one for your school desk and another for your bicycle.

Package an Ice Cube?

People who invent packaging must often use their imaginations. It is sometimes very hard to package things so that they won't break or change in some way. Test your imagination by packaging an ice cube. You will need an ice cube and packaging materials such as newspaper, plastic, styrofoam cups, aluminum foil, or other materials. Get packaging materials from home or from your teacher. Get an ice cube from your teacher.

1. Measure your ice cube before you package it. Measure the length of each side with a ruler.
2. On a piece of notebook paper, write down the measurements of the ice cube.
3. Package the ice cube so that it will melt slowly or not at all.
4. On your paper, list the materials you used for packaging.
5. Unwrap the package after one hour.
6. Is the ice cube still there, or has it melted completely?
7. If your ice cube is still there, measure it again to see if it has melted any. Write down the new measurements.
8. How did your packaging help keep the ice cube from melting?
9. Give your paper to your teacher.

Look at what your classmates used for packaging materials. Who's ice cube lasted the longest?

The Great Egg Drop

What happens to a raw egg if you drop it on the floor? Get an egg from your teacher. Use your imagination to make a package so that your teacher can drop a raw egg on the floor from a height of six feet without breaking the egg!

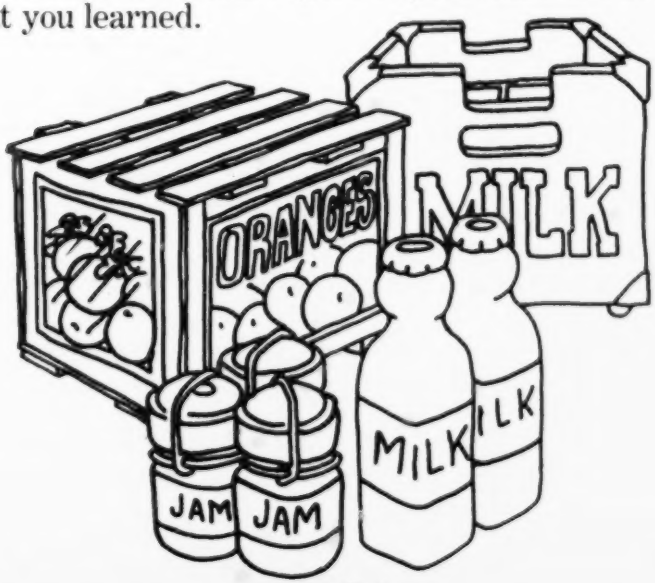
Compare your package with your friends' packages. Your class might have a contest. Your teacher may give awards to the expert packagers whose eggs can be dropped without being broken.

Talk with People

Talk with three adults who are over 50 years of age. Ask them what kinds of packages were used in the United States when they were in the third grade. Maybe you can talk to someone who was in another country when they were around eight years old. What kinds of packages did he or she use then?

Ask adults why they think packages have changed through the years.

How does modern packaging help people? Do you think packages will be different in the Year 2,000? Answer these two questions on a piece of paper. Now write a short report on what the adults you talked to said about packaging. Give the answers to these questions and your report to your teacher. Make an oral report to your class about what you learned.

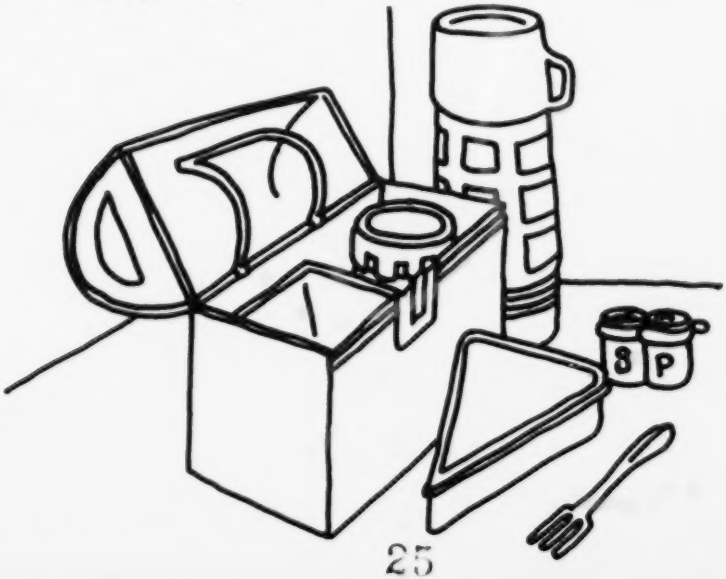


Lunchtime

For 10 school days, carry each of your lunch items in **reusable** containers. For example, pack your sandwiches in washable aluminum foil or plastic containers. Take the containers home each day. Wash them and reuse them. Use a lunch box or bag to hold it all. **Do not** use plastic wrap, paper napkins, or anything that you usually throw away after using only once. Carry a cloth napkin in your lunch container.

Do you think there would be less trash and litter in your school cafeteria if everyone used reusable containers? How did you feel about carrying home empty containers? How did you feel about having to wash and reuse your containers?

Answer these questions on a piece of paper. Give the paper to your teacher.



No Longer a Lunch Box

At the end of a school year, your lunch box may be worn out or you may want to buy a different one. An old lunch box can be used again. You can use it as a container for a first aid kit for your classroom, for your home, or for the family automobile. You can paint the outside white and add a large red cross and the words "First Aid." What should go inside the container? What other things could a lunch box hold? Write your answers on a piece of notebook paper.

Give your paper to your teacher.

School Supplies

Many children carry their school supplies, such as pencils, paper, crayons, scissors, and paste in a container such as a pencil box or notebook.

For 10 school days, do not use any kind of container for your school supplies. Carry your supplies "loose" to school and home again.

Did you have any problems? If so, what kinds of problems? Why are packages necessary? Are packages ALWAYS necessary? Why or why not?

Write the answers to these questions on a piece of paper and give your paper to your teacher.

Bag It!

Go to a grocery store with an adult, or be ready when an adult brings home a large bag of groceries.

Make a drawing of where each item is in the bag. After you have made your drawing, **pretend** that you will repack the bag, upside down. Make a drawing of the bag repacked this way. If bread was on top, it will go on the bottom. If a can of beans was on the bottom, it will go on top.

If you don't want to crush any of the food, how would containers have to be changed in order to pack upside down?

Bring your drawings to school. Help your teacher hang them up in the room.

Shopper Game

Go to a large grocery store. In 10 minutes, count as many different types of packages as you can. Write down their names. For example, a cereal box is **one** type of package, even if there are 20 different brands of cereal.

Answer these questions on your paper:

1. How many of the packages you counted are biodegradable?
2. How many of the packages are necessary?
3. How many of the packages are not necessary?
4. Which packaging materials are **reusable**?

Give your paper to your teacher.

The Reusable Bag

Get two large paper bags used to hold groceries. Place one bag inside the other for strength. Decorate the outside of your double bag.

Take your decorated bag to the grocery store and use it for your groceries. Watch people's faces. What did people say?

How many times do you think you can reuse the bag?

Make a report in class about your experience.

Salesmanship

Wrap some small treats (such as small candies) in paper. Wrap half of the treats in pretty paper. Wrap the other treats in ugly paper. Put all the treats in a small box. Let each student choose one treat. Which treats are taken first?

LEVEL 3
TEACHER CARD
OPERATION WASTE WATCH
VIRGINIA DIVISION OF LITTER CONTROL

Trash Trends
Class Activity Cards

The 15 CLASS ACTIVITY CARDS (CACs) are designed for you to use with a large group of students or the whole class. These cards outline activities to help students learn major ideas about packaging and litter. The CACs should be used after the students have seen the filmstrip and completed the IACs.

Each card lists the materials you will need. Notice that in most cases two or more cards go together. For example, CAC-2/15 is a continuation of CAC-1/15.

To shorten the unit, use only the CORE ACTIVITY CARDS. These cards are labeled CORE in the upper left-hand corners.

Duplicate a worksheet for each student for CAC-7/15.

IDEA AND OBJECTIVE NOTATIONS REFER TO NUMBERED IDEAS AND UNIT OBJECTIVES ON PAGES 1 AND 2 OF THE TEACHER GUIDE.

Some facts to help you:

Aluminum, glass, and most plastics do not biodegrade or decompose completely for thousands of years. Aluminum and glass may be recycled by people. However, the recycling of plastics has not yet been perfected. (NOTE: styrofoam is not paper but a non-biodegradable plastic.) Paper biodegrades after a certain period of time and can also be recycled.

CORE

"New" Paper Demonstration

MATERIALS YOU WILL NEED: (1) water, (2) sink area or large dish pans, (3) food blender, (4) sheets of newspapers, (5) large food strainer with metal mesh, (6) rolling pin, (7) electric iron, (8) surface to iron on such as a cutting board, (9) terry cloth towel, (10) several press cloths (old bedsheet), 10 x 15 inches, (11) 2 pieces of metal screening, 12" x 12".

CONDUCT THE FOLLOWING DEMONSTRATION FOR YOUR STUDENTS:

1. Fill a blender ¾ full with warm water and add small pieces of newspaper, one at a time, until the liquid is cloudy but not thick. The blender speed to use will be determined by the weight of the paper. Approximately 1 full-size sheet of newspaper is needed.
2. Pour the liquified pulp slowly and evenly over the entire surface of the food strainer, keeping the strainer over the sink.
3. Remove the "new paper" from the strainer. Place the paper between the 2 pieces of metal screening, on top of the towel.
4. Roll out excess moisture with a rolling pin.

Go on to CAC-2/15

5. Remove the still wet paper from the screens and place it on a press cloth. Place a second press cloth on top. On an appropriate surface, press the cotton/paper layers with a warm, dry iron. Keep the iron moving. Move the paper occasionally to prevent sticking.

USING "NEW" PAPER

Help a few of your students make a small container out of your recycled paper. You may want to use several sheets held together with tape.

Use your container for some job in the classroom until it wears out. After a week or two, ask your students these questions: How much extra use were you able to get from the old newspapers? In what other ways can we use paper, plastic, glass, or metal over and over again? Does paper decompose quickly?

Useful Packaging

Today food is usually packaged in cans or other special packaging material. These help the foods last a lot longer, protect the food from germs and are convenient to use.

Ask the students to name modern packages which are useful or convenient.

Have them draw pictures of useful packaging materials on their papers and label each item.

A Contest Outdoors

Ask the students to bring gloves to school one day.

Divide the class into 4-6 teams. Each team of children will need a large plastic trash bag. All the teams should be in the same general outdoor area. In 10 minutes have the teams collect as much man-made litter as they can. It must fit in one bag. The students should not empty wastebaskets or other refuse containers into the bags.

Award certificates to the teams who collect the most litter (see duplicating master). Keep the bags of refuse for CAC-5/15.

Go on to CAC-5/15

CORE

Classifying Trash

Use the refuse collected during the CAC-4/15 activity. Give each team several sheets of clean newspaper to spread on the floor. Instruct each team to empty their bag of trash onto the newspapers and put the trash in separate piles by categories. Have the students label each of their own categories with cards reading "glass", "metal", "paper", "plastic", etc.

Ask the students: (1) Which of the piles for each team is the largest? (2) How much of the trash is packaging materials? (3) How many times do you think each package was used before being littered? (4) Which items can be recycled?

Now combine all the trash into one big pile.

Optional—Go on to CAC-6/15

Compacting Contest

Use the trash collected for the CAC-3/15 activity.

Divide the trash evenly between groups of students. Instruct each group to compact their trash to take up the smallest possible amount of space. (Warn the students to be careful of glass and sharp metal objects. You may decide to remove all glass before this activity, and you should require the students to wear gloves.)

Give awards to the team with the **smallest** volume of trash (see duplicating master). Or a reward may be given for the smallest volume of trash that is also the heaviest. (You can use bathroom scales from home to weigh the trash.)

Discuss the fact that we are running out of land suitable for burying trash. The smaller we can compress our trash, the less space it takes up in landfills.

The Mini-Landfill

Materials You Will Need: (1) shoe box, (2) soil, (3) sheet of plastic, (4) small paper bag, (5) plastic bag, (6) cup of water. Supervise the class as the students carry out the following activities:

1. Line the shoe box with plastic sheeting so that water will not soak through.
2. Fill the lined box ⅔ full with soil.
3. Cut the paper grocery bag into pieces about 1 inch square.
4. Cut the plastic bag into pieces of similar size.
5. Bury the paper pieces in ½ of the soil-filled box.
6. Bury the plastic pieces in the other half.
7. Keep the soil moist with water, but not wet.
8. Check what happens to the buried paper and plastic after 1, 3, 5, 7, 10, 20, and 30 days. Discuss what happens. Ask individual students what "biodegradable" means. **Emphasize that paper is one man-made substance which is biodegradable.**

Pass out copies of the WORKSHEET, and after each child completes it, discuss the ideas and vocabulary presented.

Biode—What?

In activity CAC-7/15, the class compared materials to see what happens to each when it was buried. Refuse is often buried in a sanitary landfill. Help the students mentally classify some common refuse items* into the following groups: (1) that which may be disposed of properly in a landfill, and (2) that which should not go into a landfill, and (3) have them put items they are not sure of in a third category. **Write their selections under these three column headings:**

"Go to Landfill" **"Not to Landfill"** **"Not Sure"**

Help them state reasons for their classification system. Remind them that some materials can be recycled by people. Ask them what the items in the "Go to Landfill" category have in common.

***Possible Refuse Items to Consider:** (1) aluminum cans, (2) newspapers, (3) automobile tires, (4) food scraps, (5) glass bottles, (6) plastic bags, (7) grass clippings, (8) half-full paint containers, (9) non-aluminum metal containers, (10) old rags, (11) pine cones, (12) cardboard, (13) radioactive wastes, (14) chemicals.

Go on the CAC-9/15

Ask the students whether all the "Go to Landfill" items will be like the paper in activity CAC-7/15. Will all the "Not to Landfill" things be like the plastic? Remind the students that items which break down to basic elements naturally by biological processes are biodegradable. Write the word "biodegradable" on the board.

Have the students make lists on their papers of 10 biodegradable items and 10 things that are not biodegradable.

Discuss the lists with the whole class.

Call the local Sanitation Department or local Litter Control Program Coordinator to help the students determine what should be done with the "Not Sure" items. (NOTE: Some plastics give off toxic fumes when burned, others do not, and some even give off quite a bit of heat when burned. Usually it is the opaque plastic (polyvinyl chloride) containers which can cause problems. The large clear plastic bottles now on the market usually can be burned safely.)

100 Years Ago

Read the following to the class:

If you were eight years old one hundred years ago, you may have lived on a farm. You may have helped your family grow a lot of your own food, and helped to make your own clothes. Your family would not have had electricity.

Ask the following questions:

What might have you eaten for dinner? Where would you get the food? How would it be packaged? Do you think people 100 years ago had much litter? Did they have a problem getting rid of their trash? Why or why not?

Ask students to do research in social studies books and the library to find the answers.

300 Hundred Years Ago—Plus

Help students research the following questions using library books and textbooks:

What was life like in the United States in the 1600's? Who lived here? Where did most of the people live? What did these people do for a living?

Did they buy many ready-to-use products? What kinds of packaging was used for food?. . . for clothes?. . . for personal items? Was "used" packaging much of a problem? Why or why not?

What was packaging like 500 years ago, 1,000 years ago, and 2,000 years ago? What was life like for cavemen?

The Fantastic Future

Build a class discussion around the following questions:

What kinds of packages might you use on the moon? What would happen if you threw a gum wrapper on the ground on the moon?

What kinds of packages do astronauts use during space flights? How do people drink water in space?

Ask the children to imagine buying a package of powder, and adding water to the powder to make soup. Then ask them to imagine boiling the **package** to make another kind of soup! Tell the children that packages in the future might be this fantastic. Ask them to imagine other kinds of fantastic packages of the future.

Other Cultures

Bring books to class which have pictures of life in other lands. Show the class the kinds of packages used today in other countries such as Brazil, India, China, France, Australia, Saudi Arabia, South Africa, England, Sweden, Switzerland, Germany, etc.

Ask the students these questions:

In which countries do you think there are the greatest refuse disposal problems? Why?

Which countries have the most non-biodegradable packages? Which ones have the most biodegradable packages?

Inventor of the Week!

Each week during the unit ask the children to design useful objects by recycling packaging items.

Help the class select an "inventor of the week" or the "top inventors of the week." Display each object and a picture of its inventor in the classroom, hallway or principal's office.

Ranger Rick's Nature Magazine has two reprints available free of charge entitled "Recycling," and "Recycle for the Birds," which have many creative and helpful ideas. Write to:

National Wildlife Federation
1412 16th Street N.W.
Washington, D.C. 20036

The Grocery Store

Before and during this OPERATION WASTE WATCH unit, ask the children to bring food and cosmetic packages from home: cereal boxes, milk cartons and plastic jugs, vegetable cans, powder cans, shampoo bottles, etc.

Find examples of **over-packaging** (packaging which is not necessary) and show these to students. Explain that the price we pay for an item includes the cost of the packaging. Therefore, items which are over-packaged cost us more!

Set up a little **grocery store** using the packages. Put prices on each item. Include a toy cash register, play money, and grocery bags. Work out math problems for the children, using the packages.

Discuss the "second-lives" various packages can have through reuse and recycling. Help the class create signs for the grocery store encouraging the reuse and recycling of packages. Encourage "customers" to reuse the grocery bags, also. Help the students design creative ways for the store to use less packaging.

END

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